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10/769,011

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EXAMINER

BUEKER, RICHARD R

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                   |  |
|------------------------------|--------------------------------------|-----------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/769,011 | <b>Applicant(s)</b><br>LIU ET AL. |  |
|                              | <b>Examiner</b><br>Richard Bueker    | <b>Art Unit</b><br>1792           |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-6, 12 and 22-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-6, 12 and 22-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

The formal drawing replacement sheets received on December 10, 2007 are objected to and have not been entered. The following errors in the replacement drawings must be corrected. In Fig. 3, element 64C of the original drawing is missing. In Fig. 5, elements 144A and 144B do not accurately reproduce the original Fig. 5. In Fig. 5, the LFC is incorrectly labeled 110A but it should be labeled 112B. In Fig. 7, element 184 should be "GAS" instead of "GFC". In Fig. 8, elements 202 and 190 are not accurately reproduced in comparison to the original Fig. 8.

Claims 12 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In each of claims 12 and 26, the phrase "the outlet of the housing" is unclear, vague and indefinite because it lacks proper antecedent basis.

Claims 12 and 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka (2002/00432215) in view of Dornfest (6,082,714). Yoshioka (see Figs. 1, 2, for example) discloses a vaporization system including a vaporization chamber receiving an aerosol from an atomizer, the aerosol comprising gas and liquid droplets from first and second respective gas and liquid sources, at least one of the sources comprising a plurality of different individually selectable material, said vaporization chamber including a housing defining a vaporization chamber having an inlet and an outlet, and a heated member comprising a first block. Yoshioka doesn't disclose a heated block having the structure recited in claims 22-27. Dornfest (see Fig. 15) discloses a vaporization system analogous to that of Yoshioka, and Dornfest also

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teaches the use of a heated metal block for vaporizing an atomized liquid. The heated block 188 of Dornfest is a first metal block that includes a plurality of passageways between fins 178, and a bore aligned with the inlet of the vaporization chamber as claimed. Dornfest's vaporization chamber also includes a second block 186 having passageways as recited in claim 26. Recirculation as recited in claim 25 would be inherent at least some degree in the vaporization chamber of Dornfest. In view of the combined teachings of Yoshioka and Dornfest, it would have been obvious to provide a vaporization chamber receiving an aerosol from an atomizer, the aerosol comprising gas and liquid droplets from first and second respective gas and liquid sources, at least one of the sources comprising a plurality of different individually selectable materials as taught by Yoshioka, wherein the vaporization chamber comprises the heated block design of Dornfest. Regarding claim 12, both Yoshioka and Dornfest teach that their vaporizer is intended to be used in combination with a process chamber and film formation, with the outlet of the vaporizer housing being connected to an inlet of the process chamber.

Claims 2-6, 12 and 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka (2002/00432215) in view of Dornfest (6,082,714) as stated above, and taken in further view of Yamoto (WO 03/079421). Yamoto (EP 1492159) is a patent family equivalent of Yamoto (WO 03/079421), and Yamoto (EP 1492159) will be used in this office action as an English translation of Yamoto (WO 03/079421). Applicants have amended claim 22 to change "first and second respective gas or liquid sources" to "first and second respective gas and liquid sources". To the extent that

claim 22 as amended could be interpreted to require plural gas sources of differing chemical compositions and plural liquid sources of different chemical compositions, it would have been obvious to provide plural sources of gases of differing chemical compositions and plural sources of liquids of differing chemical composition in the apparatus of Yoshioka and Dornfest, because Yamoto (Figs. 3, 14 and 21 for example) teaches that it is desirable to provide plural sources of gas (oxygen and argon) and plural sources of liquids to be vaporized.

Applicants' arguments have been considered but are not persuasive.

Regarding the claimed inlet and the claimed orifice, it is noted that "inlet" is defined as "an entrance, opening, or passage", and "orifice" is defined as "a mouth, or aperture of a tube, cavity, etc.; opening". "Aperture" is defined as "an opening; hole; gap".

In Dornfest's Fig. 15, the first metal block 188 and the second metal block 186 comprise a housing which defines a vaporization chamber 176. The vaporization chamber 176 includes an inlet, which is the outlet of the bore in block 188, and an outlet, which is, for example, the inlet to port 182, or port 182 itself or the main outlet 184. It is noted also that the main outlet 184 is also an outlet of the housing. The block 188 is a first metal block comprising a heated surface member. The first metal block 188 includes a plurality of passageways therethrough that are machined directly into the first metal block (see col. 13, lines 44-60), and are integral with the metal block. Also, the outlet of nozzle 170 is "an orifice in the first metal block directly aligned with the inlet, said orifice forming an opening leading to the bore in the first metal block".

Alternatively, the outlet of the concentric passage 174 is also an orifice as claimed.

Alternatively, the opening into the bore directly below the outlets of the nozzle 170 and the concentric passage 174 is also an “orifice forming an opening leading to the bore in the first metal block”, particularly when the concentric nozzle structure of Yoshioka is substituted for Dornfest's concentric passage structure. Such a substitution would have been an obvious modification.

Regarding the claim 25 recitation of “the velocity of the gas jet causes a recirculation from an output side of the bore of the first metal block through the plurality of passageways in the first metal block back toward the inlet for mixing with the aerosol” it is first noted that “the velocity of the gas jet” is a process parameter that does not so limit the apparatus claims. Also, Dornfest teaches (see col. 13, lines 4-60) that his passages are specifically designed to create twists and turns of the pathways that serve to vigorously mix the precursor components and carrier gases. The design of Dornfest's passageways would inherently cause eddy currents at least to some extent in the fluid flow, in which the fluid was directed back toward the inlet for mixing with the aerosol fluid. Eddy currents caused by twisting and turning would inherently represent “a recirculation” as recited in claim 25.

Regarding claim 27, it is noted that the second metal block 186 has an imperforate surface aligned with the bore of the first metal block, and it diverts gas striking it in a lateral direction into the labyrinth passageways which are formed in both the first metal block and the second metal block.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Richard Bueker/  
Primary Examiner, Art Unit 1792